storing or transmitting tracked motion of the object.

13.(amended)   The method of claim 11 wherein the step of tracking comprises the steps of:

determining a surface normal for each salient features;

tracking motion of the object in each 2-D image; and

tracking the 3-D global motion of the object in each image; and

tracking the 3-D local motion of the object in each image.

14. (amended) The method of claim 12 comprising the further step of repeating the locking and tracking steps after the detecting step.

31. (amended) The method of claim 11 wherein the acquired 2-D images include a plurality of views of the face with markers in at least one action state.

42. (amended) The method of claim 40 wherein the step of estimating the 3 D global motion comprises calculating the position and orientation of the face to conform to the 3-D locations and the detected locations of the global markers under a perspective projection model.

46.(amended)   The method of claim 45 wherein the step of predicting the locations of local markers comprises calculating the locations of the local markers using the position, orientation, and action values of the face in a previous 2-D image and the step of detecting comprise detecting the local markers.

47. (amended) The method of claim 46 wherein detecting the local markers comprise:

determining visibility indices of local markers;

designing correlation filters for the local markers;

detecting the local markers by applying elliptical correlation filters in a neighborhood of the local markers; and

eliminating superfluous and multiple detected locations.

48. (amended) The method of claim 47 wherein the step of estimating comprises:

finding 3-D locations of local markers to conform to the detected 2-D locations of the local markers;

calculating an action vector representing the weights of facial actions in the 2-D image conforming to the found 3-D locations of local markers and the 3-D locations of the local markers for the neutral and the action states under a perspective projection model.

Enter the following new claims:

60. (new) A method for tracking motion of an object in a chronologically ordered sequence of 2-D images of the object comprising the steps of:

selecting global and local salient features of the object for tracking;

calculating 3-D locations of the global and local salient features for a neutral state of the object, and calculating 3-D locations of the local salient features for action states of the object;

predicting 2-D locations of global and local salient features in a 2-D image;

detecting 2-D locations of global and local salient features in the 2-D image; and

estimating the global and local motion of the object in the 2-D image.

61. (new) The method of claim 60 where the action states of the object define maximum local motions of the object.

62. (new) The method of claim 61 where the method of calculating comprises:

acquiring a plurality of initial 2-D images of the object in neutral state;

acquiring a plurality of initial 2-D images of the object in action states

identifying the 2-D locations of the salient features in each initial 2-D image;

estimating the orientation and position of the object in each initial 2-D image to conform to the 2-D locations of the salient features under a perspective projection model; and

calculating 3-D locations of the salient features to conform to the 2-D locations of the salient features under a perspective projection model.

63 (new) The method of claim 60 wherein the step of selecting comprises fixing markers to the object, the step of predicting comprises predicting the locations of the markers, and the step of detecting comprises detecting the locations of the markers.

64 (new) The method of claim 63 wherein a first set of markers define global salient features and a second set of markers define local salient features.

65 (new) The method of claim 63 wherein the step of estimating global motion comprises calculating 3-D position and orientation of the object to conform to the 3-D locations of the global markers in the neutral state and the detected 2-D locations of the global markers under a perspective projection model.

66 (new) The method of claim 63 wherein the step of estimating local motion comprise calculating a vector of weights representing fractions of maximum actions of the object conforming to the 3-D locations of local markers in the neutral and action states and the detected 2-D locations of the local markers under a perspective projection model.

67 (new) The method of claim 60 wherein the object is a face.

68 (new) The method of claim 63 wherein the markers comprise concentric circles with two contrasting colors.

69 (new) The method of claim 68 wherein the step of detecting comprises applying elliptical correlation filters in a neighborhood of the markers.

REMARKS

This amendment is submitted to broaden the scope of the claims, to explain features of the prior art and to clarify the original claims.